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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/224,467	12/31/1998	CRYUS A. ASHTIANI	98-1850-(036	3658
7590 08/16/2004			EXAMINER	
JENNIFER M STEC - CIMS 483-02-19			SQUIRES, BRETT S	
DAIMLERCHRYSLER CORPORATION			ART UNIT	
DAIMLERCHRYSLER TECHNOLOGY CENTER			PAPER NUMBER	
800 CHRYSLER DRIVE EAST			2836	
AUBURN HILLS, MI 483262757			DATE MAILED: 08/16/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/224,467

Applicant(s)

ASHTIANI ET AL.

Examiner

Brett S Squires

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/01/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 1998 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: "L_o" (p. 10 line 16). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: it contains the following grammar and spelling errors "invertor" this is understood to be "inverter" (p.6 line 19), and "therebetween" this is understood to be "there between" (p.7 line 19).

Appropriate correction is required.

3. The disclosure is objected to because of the following informalities: the following elements have the wrong reference numbers in the specification "first and second transistors 172, 174" this is understood to be "first and second

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transistors 170, 172" (p. 8 lines 16-17), "from one branch or phase 132"

reference number 132 specifically refers to the first branch and the reference is not appropriately used in the given context (p. 8 line 23).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "optionally" in claim 1 is a relative term, which renders the claim indefinite. The term "optionally" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Heinrich (US 5,291,388).

Heinrich discloses (claim 1) an inverter circuit connected to a battery for powering an electric motor (col. 1 lines 50-60, col.2 lines 1-16, figures 1-4). The optional warming function for the energy storage device is not positively recited in claim 1 and thus is not considered in the examination of the claims.

Heinrich further discloses (claims 1,3) that the inverter circuit is connected to the electric motor and the energy storage device for generating an alternating current from the battery (col. 1 lines 50-60), switching means operably associated with the circuit for selectively directing the current to one of the electric motor and the battery ("switch" figure 2 ref# 54, col.3 lines 38-66), and (claim 2) the switching means includes a device operable between a first state and a second state ("switch" figure 2 ref# 54) for directing the current to the electric motor and a second state for directing the current through the energy storage device (col. 3 lines 38-66, col.2 lines 1-16).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3 rejected under 35 U.S.C. 103(a) as being obvious over Heinrich (US 5,291,388) and Vanderslice (US 5,362,942).

Heinrich discloses (claim 1) an inverter circuit connected to a battery for powering an electric motor (col. 1 lines 50-60, col.2 lines 1-16), (claims 1,3) that the inverter circuit is connected to the electric motor and the energy storage device for generating an alternating current from the battery (col. 1 lines 50-60), switching means operably associated with the circuit for selectively directing the current to one of the electric motor and the battery ("switch" figure 2 ref# 54, col.3 lines 38-66), and (claim 2) the switching means includes a device operable between a first state and a second state ("switch" figure 2 ref# 54 col.3 lines 38-66) for directing the current to the electric motor and a second state for directing the current through the energy storage device (col.2 lines 1-16, col. 3 lines 38-66).

Heinrich does not disclose providing a warming function for the energy storage device.

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Vanderslice teaches using a battery charger to heat the battery by passing AC current through the battery and using the internal resistance of the battery as the heating element (col. 2 lines 25-38, col. 3 lines 63-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Vanderslice's teaching to create a control scheme for the PWM contained in Heinrich's inverter circuit that passing AC current through the battery and using the internal resistance of the battery as the heating element to heat the battery in extreme cold weather environment and thus allowing the battery to operate at its full potential.

11. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being obvious over Heinrich (US 5,291,388) in view of Vanderslice (US 5,362,942) and Campbell (US 4,491,779).

Regarding Claims 4-5,7-8:

The combination of Heinrich and Vanderslice discloses the above stated inverter circuit that provides a warming function for the battery.

Heinrich does not disclose:

- A. an energy storage device including at least first and second cells having positive and negative terminals and a centertap formed between the first and second cells nor;
- B. a switching device connected to the positive and negative terminals and to the centertap of the energy storage device nor;

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C. a switching device operably associated with the inverter circuit for selectively controlling the current flow to one of the electrical motor and the energy storage device nor;

D. the switching device providing a first electrical connection between the centertap of the energy storage device and the inverter circuit for directing the alternating current through the energy storage device for generating heat nor;

E. the switching device providing a second electrical connection between the inverter circuit and the electrical motor for directing the alternating current to the electric motor

Campbell discloses (A,B,D) a battery unit consisting of two batteries connected in series having positive and negative terminals and a centertap between the two batteries (figure 1 ref# 50,54), a switching device connected to the positive and negative terminals and to the centertap of the energy storage device ("switch" figure 1 ref# 90,92, "controlled rectifiers" figure 1 ref# 72, figures 2-3, col. 3 lines 41-53 and col. 4 lines 19-25, 29-33). The switch ref# 90 is clearly shown connected to the positive terminal of the battery, the switch ref# 92 is clearly shown connected to the negative terminal of the battery, the controlled rectifiers ref# 72 are shown connected to the centertap of the battery and they have effectively open (shown in figure 3) and effectively closed (shown in figure 2) operational states that correspond to the open and closed states of a switching device. This battery connection system as taught by Campbell will replace the battery in the inverter circuit as taught by Heinrich. The controlled rectifiers will

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then be used as a switching device providing a first electrical connection between the centertap of the energy storage device inverter circuit and the electrical motor for directing the alternating current through the energy storage device for generating heat ("controlled rectifiers" figure 1 ref# 72, figures 2-3, col. 3 lines 41-53 and col. 4 lines 19-25, 29-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the combination of Heinrich and Vanderslice the multi-celled centertapped battery and the accompanying switching devices connected to the battery in order to provide a more controlled means for warming the battery by allowing the AC current to be passed through individual battery cells.

Heinrich disclosed (C,E) in the inverter circuit a switching device operably associated with the inverter circuit for selectively controlling the current flow to one of the electrical motor and the energy storage device ("switch" figure 2 ref# 54 col.3 lines 38-66), when viewed in combination with the above combination of Heinrich and Vanderslice and Campbell this switch will provide a second electrical connection between the inverter circuit and the motor for directing the alternating current to the electric motor.

Regarding Claim 6:

The proposed modification of Heinrich in view of Vanderslice and Campbell discloses a device that provides the heating current via a center tap to the desired cells.

Regarding Claim 9:

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Heinrich discloses the use of an inductor to suppress harmonics in an inverter circuit and the placement of the inductor in an inverter circuit (figure 2 ref# 67 col.4 lines 18-19) however Heinrich does not disclose placing the inductor between the centertap of the energy storage device and the inverter circuit. Since the applicant has not disclosed that placing the inductor between the centertap of the energy storage device and the inverter circuit solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with either placement of the inductor, therefore the location of this inductor is deemed an engineering decision.

12. Claims 10-20 are rejected under 35 U.S.C. 103(a) as being obvious over Heinrich (US 5,291,388) in view of Vanderslice (US 5,362,942) and Campbell (US 4,491,779).

The combination of Heinrich, Vanderslice, and Campbell discloses the above stated inverter circuit.

Regarding claims 10-11,16-18

The combination of Heinrich, Vanderslice, and Campbell further discloses a disconnect circuit connected to the inverter circuit and the energy storage device operable for switching between a first mode and a second mode of the inverter circuit for powering the electric motor (following switches are used to comprise the disconnect circuit switch ref# 90, the switch ref# 92, and the controlled rectifiers ref# 72 in figure 1 of Campbell and switch ref# 54 in figure 1 of Heinrich), closing all of the switches will direct AC current from the battery to the current switching branches of the inverter circuit for powering the electric

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motor by passing the AC current from the common nodes of all the switching branches to the motor (figure 2 ref# 50,51,66), opening switch ref# 54 in Heinrich will isolate the first branch of the inverter circuit from the remaining branches of the inverter circuit and the electric motor thus allowing the first branch to be switched for circulating AC current through the battery.

Regarding claims 12-15 the specific locations of the switches has already been discussed above.

Regarding Claim 19:

The proposed modification of Heinrich in view of Vanderslice and Campbell discloses a device that provides the heating current via a center tap to the desired cells.

Regarding Claim 20:

Heinrich discloses the use of an inductor to suppress harmonics in an inverter circuit and the placement of the inductor in an inverter circuit (figure 2 ref# 67 col.4 lines 18-19) however Heinrich does not disclose placing the inductor between the centertap of the energy storage device and the inverter circuit. Since the applicant has not disclosed that placing the inductor between the centertap of the energy storage device and the inverter circuit solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with either placement of the inductor, therefore the location of this inductor is deemed an engineering decision.

Conclusion

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13. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure. Additional prior art of interest includes but is not limited to the following US Patents and Publications, Foreign Patents and Publications and Non-patent Literature: US 20030053324 A1, US 6710574 B2, US 6331365 B1, US 5710699 A, US 5291388 A, US 5552980 A, US 5488283 A, US 4309622 A, US 6054842 A, US 5362942 A, and US 5956241 A.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett S Squires whose telephone number is (571)272- 2268. The examiner can normally be reached on 8am-5:30pm Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2058. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Brett S Squires
Examiner
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A handwritten signature in black ink, appearing to read 'B. Sircus', with a stylized flourish extending from the end.

BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800